

SEQUENCE LISTING



<110> Shyur, Lie-Fen
Wen, Tuan-Nan
Lee, Shu-Hua
Yang, Ning-Sun

<120> Truncated 1,3-1,4-Beta-D-Glucanase

<130> 08919-111001

<140> US 10/773,455

<141> 2004-02-06

<150> US 09/654,652

<151> 2000-09-05

<160> 22

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 349

<212> PRT

<213> Fibrobacter succinogenes

<400> 1

Met	Asn	Ile	Lys	Lys	Thr	Ala	Val	Lys	Ser	Ala	Leu	Ala	Val	Ala	Ala	1	5	10	15
Ala	Ala	Ala	Ala	Leu	Thr	Thr	Asn	Val	Ser	Ala	Lys	Asp	Phe	Ser	Gly	20	25	30	
Ala	Glu	Leu	Tyr	Thr	Leu	Glu	Glu	Val	Gln	Tyr	Gly	Lys	Phe	Glu	Ala	35	40	45	
Arg	Met	Lys	Met	Ala	Ala	Ala	Ser	Gly	Thr	Val	Ser	Ser	Met	Phe	Leu	50	55	60	
Tyr	Gln	Asn	Gly	Ser	Glu	Ile	Ala	Asp	Gly	Arg	Pro	Trp	Val	Glu	Val	65	70	75	80
Asp	Ile	Glu	Val	Leu	Gly	Lys	Asn	Pro	Gly	Ser	Phe	Gln	Ser	Asn	Ile	85	90	95	
Ile	Thr	Gly	Lys	Ala	Gly	Ala	Gln	Lys	Thr	Ser	Glu	Lys	His	His	Ala	100	105	110	
Val	Ser	Pro	Ala	Ala	Asp	Gln	Ala	Phe	His	Thr	Tyr	Gly	Leu	Glu	Trp	115	120	125	
Thr	Pro	Asn	Tyr	Val	Arg	Trp	Thr	Val	Asp	Gly	Gln	Glu	Val	Arg	Lys	130	135	140	
Thr	Glu	Gly	Gly	Gln	Val	Ser	Asn	Leu	Thr	Gly	Thr	Gln	Gly	Leu	Arg	145	150	155	160
Phe	Asn	Leu	Trp	Ser	Ser	Glu	Ser	Ala	Ala	Trp	Val	Gly	Gln	Phe	Asp	165	170	175	
Glu	Ser	Lys	Leu	Pro	Leu	Phe	Gln	Phe	Ile	Asn	Trp	Val	Lys	Val	Tyr	180	185	190	
Lys	Tyr	Thr	Pro	Gly	Gln	Gly	Glu	Gly	Gly	Ser	Asp	Phe	Thr	Leu	Asp	195	200	205	
Trp	Thr	Asp	Asn	Phe	Asp	Thr	Phe	Asp	Gly	Ser	Arg	Trp	Gly	Lys	Gly	210	215	220	

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Asp Trp Thr Phe Asp Gly Asn Arg Val Asp Leu Thr Asp Lys Asn Ile
225                230                235                240
Tyr Ser Arg Asp Gly Met Leu Ile Leu Ala Leu Thr Arg Lys Gly Gln
                245                250                255
Glu Ser Phe Asn Gly Gln Val Pro Arg Asp Asp Glu Pro Ala Pro Gln
                260                265                270
Ser Ser Ser Ser Ala Pro Ala Ser Ser Ser Ser Val Pro Ala Ser Ser
                275                280                285
Ser Ser Val Pro Ala Ser Ser Ser Ser Ala Phe Val Pro Pro Ser Ser
                290                295                300
Ser Ser Ala Thr Asn Ala Ile His Gly Met Arg Thr Thr Pro Ala Val
305                310                315                320
Ala Lys Glu His Arg Asn Leu Val Asn Ala Lys Gly Ala Lys Val Asn
                325                330                335
Pro Asn Gly His Lys Arg Tyr Arg Val Asn Phe Glu His
                340                345

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<210> 2

<211> 27

<212> PRT

<213> Fibrobacter succinogenes

<400> 2

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Met Asn Ile Lys Lys Thr Ala Val Lys Ser Ala Leu Ala Val Ala Ala
 1                5                10                15
Ala Ala Ala Ala Leu Thr Thr Asn Val Ser Ala
                20                25

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<210> 3

<211> 175

<212> PRT

<213> Fibrobacter succinogenes

<400> 3

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Lys Asp Phe Ser Gly Ala Glu Leu Tyr Thr Leu Glu Glu Val Gln Tyr
 1                5                10                15
Gly Lys Phe Glu Ala Arg Met Lys Met Ala Ala Ala Ser Gly Thr Val
                20                25                30
Ser Ser Met Phe Leu Tyr Gln Asn Gly Ser Glu Ile Ala Asp Gly Arg
                35                40                45
Pro Trp Val Glu Val Asp Ile Glu Val Leu Gly Lys Asn Pro Gly Ser
 50                55                60
Phe Gln Ser Asn Ile Ile Thr Gly Lys Ala Gly Ala Gln Lys Thr Ser
65                70                75                80
Glu Lys His His Ala Val Ser Pro Ala Ala Asp Gln Ala Phe His Thr
                85                90                95
Tyr Gly Leu Glu Trp Thr Pro Asn Tyr Val Arg Trp Thr Val Asp Gly
                100                105                110
Gln Glu Val Arg Lys Thr Glu Gly Gln Val Ser Asn Leu Thr Gly
                115                120                125
Thr Gln Gly Leu Arg Phe Asn Leu Trp Ser Ser Glu Ser Ala Ala Trp
130                135                140
Val Gly Gln Phe Asp Glu Ser Lys Leu Pro Leu Phe Gln Phe Ile Asn
145                150                155                160
Trp Val Lys Val Tyr Lys Tyr Thr Pro Gly Gln Gly Glu Gly Gly

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165

170

175

<210> 4

<211> 64

<212> PRT

<213> Fibrobacter succinogenes

<400> 4

Ser	Asp	Phe	Thr	Leu	Asp	Trp	Thr	Asp	Asn	Phe	Asp	Thr	Phe	Asp	Gly
1				5				10					15		
Ser	Arg	Trp	Gly	Lys	Gly	Asp	Trp	Thr	Phe	Asp	Gly	Asn	Arg	Val	Asp
			20					25				30			
Leu	Thr	Asp	Lys	Asn	Ile	Tyr	Ser	Arg	Asp	Gly	Met	Leu	Ile	Leu	Ala
			35				40					45			
Leu	Thr	Arg	Lys	Gly	Gln	Glu	Ser	Phe	Asn	Gly	Gln	Val	Pro	Arg	Asp
	50					55					60				

<210> 5

<211> 78

<212> PRT

<213> Fibrobacter succinogenes

<400> 5

Gln	Ser	Ser	Ser	Ser	Ala	Pro	Ala	Ser	Ser	Ser	Ser	Val	Pro	Ala	Ser
1				5				10					15		
Ser	Ser	Ser	Val	Pro	Ala	Ser	Ser	Ser	Ala	Phe	Val	Pro	Pro	Ser	
			20					25				30			
Ser	Ser	Ser	Ala	Thr	Asn	Ala	Ile	His	Gly	Met	Arg	Thr	Thr	Pro	Ala
			35				40					45			
Val	Ala	Lys	Glu	His	Arg	Asn	Leu	Val	Asn	Ala	Lys	Gly	Ala	Lys	Val
	50					55					60				
Asn	Pro	Asn	Gly	His	Lys	Arg	Tyr	Arg	Val	Asn	Phe	Glu	His		
65					70					75					

<210> 6

<211> 1050

<212> DNA

<213> Fibrobacter succinogenes

<220>

<221> CDS

<222> (1)...(1047)

<400> 6

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Met	Asn	Ile	Lys	Lys	Thr	Ala	Val	Lys	Ser	Ala	Leu	Ala	Val	Ala	Ala	
1				5				10					15			
gca	gca	gca	gcc	ctc	acc	acc	aat	gtt	agc	gca	aag	gat	ttt	agc	ggc	96
Ala	Ala	Ala	Ala	Leu	Thr	Thr	Asn	Val	Ser	Ala	Lys	Asp	Phe	Ser	Gly	
			20					25					30			
gcc	gaa	ctc	tac	acg	tta	gaa	gaa	gtt	cag	tac	ggc	aag	ttt	gaa	gcc	144
Ala	Glu	Leu	Tyr	Thr	Leu	Glu	Glu	Val	Gln	Tyr	Gly	Lys	Phe	Glu	Ala	

35	40	45	
cgt atg aag atg gca gcc gca tcg gga aca gtc agt tcc atg ttc ctc Arg Met Lys Met Ala Ala Ala Ser Gly Thr Val Ser Ser Met Phe Leu 50 55 60			192
tac cag aat ggt tcc gaa atc gcc gat gga agg ccc tgg gta gaa gtg Tyr Gln Asn Gly Ser Glu Ile Ala Asp Gly Arg Pro Trp Val Glu Val 65 70 75 80			240
gat att gaa gtt ctc ggc aag aat ccg ggc agt ttc cag tcc aac atc Asp Ile Glu Val Leu Gly Lys Asn Pro Gly Ser Phe Gln Ser Asn Ile 85 90 95			288
att acc ggt aag gcc ggc gca caa aag act agc gaa aag cac cat gct Ile Thr Gly Lys Ala Gly Ala Gln Lys Thr Ser Glu Lys His His Ala 100 105 110			336
gtt agc ccc gcc gcc gat cag gct ttc cac acc tac ggt ctc gaa tgg Val Ser Pro Ala Ala Asp Gln Ala Phe His Thr Tyr Gly Leu Glu Trp 115 120 125			384
act ccg aat tac gtc cgc tgg act gtt gac ggt cag gaa gtc cgc aag Thr Pro Asn Tyr Val Arg Trp Thr Val Asp Gly Gln Glu Val Arg Lys 130 135 140			432
acg gaa ggt ggc cag gtt tcc aac ttg aca ggt aca cag gga ctc cgt Thr Glu Gly Gly Gln Val Ser Asn Leu Thr Gly Thr Gln Gly Leu Arg 145 150 155 160			480
ttt aac ctt tgg tcg tct gag agt gcg gct tgg gtt ggc cag ttc gat Phe Asn Leu Trp Ser Ser Glu Ser Ala Ala Trp Val Gly Gln Phe Asp 165 170 175			528
gaa tca aag ctt ccg ctt ttc cag ttc atc aac tgg gtc aag gtt tat Glu Ser Lys Leu Pro Leu Phe Gln Phe Ile Asn Trp Val Lys Val Tyr 180 185 190			576
aag tat acg ccg ggc cag ggc gaa ggc ggc agc gac ttt acg ctt gac Lys Tyr Thr Pro Gly Gln Gly Glu Gly Gly Ser Asp Phe Thr Leu Asp 195 200 205			624
tgg acc gac aat ttt gac acg ttt gat ggc tcc cgc tgg ggc aag ggt Trp Thr Asp Asn Phe Asp Thr Phe Asp Gly Ser Arg Trp Gly Lys Gly 210 215 220			672
gac tgg aca ttt gac ggt aac cgt gtc gac ctc acc gac aag aac atc Asp Trp Thr Phe Asp Gly Asn Arg Val Asp Leu Thr Asp Lys Asn Ile 225 230 235 240			720
tac tcc aga gat ggc atg ttg atc ctc gcc ctc acc cgc aaa ggt cag Tyr Ser Arg Asp Gly Met Leu Ile Leu Ala Leu Thr Arg Lys Gly Gln 245 250 255			768
gaa agc ttc aac ggc cag gtt ccg aga gat gac gaa cct gct ccg caa Glu Ser Phe Asn Gly Gln Val Pro Arg Asp Asp Glu Pro Ala Pro Gln 260 265 270			816

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tct tct agc agc gct ccg gca tct tct agc agt gtt ccg gca agc tcc 864
Ser Ser Ser Ser Ala Pro Ala Ser Ser Ser Ser Val Pro Ala Ser Ser
      275              280              285

tct agc gtc cct gcc tcc tcg agc agc gca ttt gtt ccg ccg agc tcc 912
Ser Ser Val Pro Ala Ser Ser Ser Ser Ala Phe Val Pro Pro Ser Ser
      290              295              300

tcg agc gcc aca aac gca atc cac gga atg cgc aca act ccg gca gtt 960
Ser Ser Ala Thr Asn Ala Ile His Gly Met Arg Thr Thr Pro Ala Val
      305              310              315              320

gca aag gaa cac cgc aat ctc gtg aac gcc aag ggt gcc aag gtg aac 1008
Ala Lys Glu His Arg Asn Leu Val Asn Ala Lys Gly Ala Lys Val Asn
      325              330              335

ccg aat ggc cac aag cgt tat cgc gtg aac ttt gaa cac taa 1050
Pro Asn Gly His Lys Arg Tyr Arg Val Asn Phe Glu His
      340              345

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<210> 7
<211> 248
<212> PRT
<213> Artificial Sequence

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<220>
<223> Synthetic construct

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<400> 7
Met Val Ser Ala Lys Asp Phe Ser Gly Ala Glu Leu Tyr Thr Leu Glu
 1      5      10      15
Glu Val Gln Tyr Gly Lys Phe Glu Ala Arg Met Lys Met Ala Ala Ala
      20      25      30
Ser Gly Thr Val Ser Ser Met Phe Leu Tyr Gln Asn Gly Ser Glu Ile
      35      40      45
Ala Asp Gly Arg Pro Trp Val Glu Val Asp Ile Glu Val Leu Gly Lys
      50      55      60
Asn Pro Gly Ser Phe Gln Ser Asn Ile Ile Thr Gly Lys Ala Gly Ala
      65      70      75      80
Gln Lys Thr Ser Glu Lys His His Ala Val Ser Pro Ala Ala Asp Gln
      85      90      95
Ala Phe His Thr Tyr Gly Leu Glu Trp Thr Pro Asn Tyr Val Arg Trp
      100      105      110
Thr Val Asp Gly Gln Glu Val Arg Lys Thr Glu Gly Gly Gln Val Ser
      115      120      125
Asn Leu Thr Gly Thr Gln Gly Leu Arg Phe Asn Leu Trp Ser Ser Glu
      130      135      140
Ser Ala Ala Trp Val Gly Gln Phe Asp Glu Ser Lys Leu Pro Leu Phe
      145      150      155      160
Gln Phe Ile Asn Trp Val Lys Val Tyr Lys Tyr Thr Pro Gly Gln Gly
      165      170      175
Glu Gly Gly Ser Asp Phe Thr Leu Asp Trp Thr Asp Asn Phe Asp Thr
      180      185      190
Phe Asp Gly Ser Arg Trp Gly Lys Gly Asp Trp Thr Phe Asp Gly Asn
      195      200      205

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Arg Val Asp Leu Thr Asp Lys Asn Ile Tyr Ser Arg Asp Gly Met Leu
 210 215 220
 Ile Leu Ala Leu Thr Arg Lys Gly Gln Glu Ser Phe Asn Gly Gln Val
 225 230 235 240
 Pro Arg Asp Asp Glu Pro Ala Pro
 245

<210> 8
 <211> 248
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic construct

<400> 8
 Met Val Ser Ala Lys Asp Phe Ser Gly Ala Glu Leu Tyr Thr Leu Glu
 1 5 10 15
 Glu Val Gln Tyr Gly Lys Phe Glu Ala Arg Met Lys Met Ala Ala Ala
 20 25 30
 Ser Gly Thr Val Ser Ser Met Phe Leu Tyr Gln Asn Gly Ser Glu Ile
 35 40 45
 Ala Asp Gly Arg Pro Trp Val Glu Val Asp Ile Glu Val Leu Gly Lys
 50 55 60
 Asn Pro Gly Ser Phe Gln Ser Asn Ile Ile Thr Gly Lys Ala Gly Ala
 65 70 75 80
 Gln Lys Thr Ser Glu Lys His His Ala Val Ser Pro Ala Ala Asp Gln
 85 90 95
 Ala Phe His Thr Tyr Gly Leu Glu Trp Thr Pro Asn Tyr Val Arg Trp
 100 105 110
 Thr Val Asp Gly Gln Glu Val Arg Lys Thr Glu Gly Gly Gln Val Ser
 115 120 125
 Asn Leu Thr Gly Thr Gln Gly Leu Arg Phe Asn Leu Trp Ser Ser Glu
 130 135 140
 Ser Ala Ala Trp Val Gly Gln Phe Asp Glu Ser Lys Leu Pro Leu Phe
 145 150 155 160
 Gln Phe Ile Asn Trp Val Lys Val Tyr Lys Tyr Thr Pro Gly Gln Gly
 165 170 175
 Glu Gly Gly Ser Asp Phe Thr Leu Asp Trp Thr Asp Asn Phe Asp Thr
 180 185 190
 Phe Asp Gly Ser Arg Trp Gly Lys Gly Asp Phe Thr Phe Asp Gly Asn
 195 200 205
 Arg Val Asp Leu Thr Asp Lys Asn Ile Tyr Ser Arg Asp Gly Met Leu
 210 215 220
 Ile Leu Ala Leu Thr Arg Lys Gly Gln Glu Ser Phe Asn Gly Gln Val
 225 230 235 240
 Pro Arg Asp Asp Glu Pro Ala Pro
 245

<210> 9
 <211> 257
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Fusion peptide

<400> 9

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Met Val Ser Ala Lys Asp Phe Ser Gly Ala Glu Leu Tyr Thr Leu Glu
 1          5          10          15
Glu Val Gln Tyr Gly Lys Phe Glu Ala Arg Met Lys Met Ala Ala Ala
          20          25          30
Ser Gly Thr Val Ser Ser Met Phe Leu Tyr Gln Asn Gly Ser Glu Ile
          35          40          45
Ala Asp Gly Arg Pro Trp Val Glu Val Asp Ile Glu Val Leu Gly Lys
          50          55          60
Asn Pro Gly Ser Phe Gln Ser Asn Ile Ile Thr Gly Lys Ala Gly Ala
65          70          75          80
Gln Lys Thr Ser Glu Lys His His Ala Val Ser Pro Ala Ala Asp Gln
          85          90          95
Ala Phe His Thr Tyr Gly Leu Glu Trp Thr Pro Asn Tyr Val Arg Trp
          100          105          110
Thr Val Asp Gly Gln Glu Val Arg Lys Thr Glu Gly Gly Gln Val Ser
          115          120          125
Asn Leu Thr Gly Thr Gln Gly Leu Arg Phe Asn Leu Trp Ser Ser Glu
          130          135          140
Ser Ala Ala Trp Val Gly Gln Phe Asp Glu Ser Lys Leu Pro Leu Phe
145          150          155          160
Gln Phe Ile Asn Trp Val Lys Val Tyr Lys Tyr Thr Pro Gly Gln Gly
          165          170          175
Glu Gly Gly Ser Asp Phe Thr Leu Asp Trp Thr Asp Asn Phe Asp Thr
          180          185          190
Phe Asp Gly Ser Arg Trp Gly Lys Gly Asp Trp Thr Phe Asp Gly Asn
          195          200          205
Arg Val Asp Leu Thr Asp Lys Asn Ile Tyr Ser Arg Asp Gly Met Leu
          210          215          220
Ile Leu Ala Leu Thr Arg Lys Gly Gln Glu Ser Phe Asn Gly Gln Val
225          230          235          240
Pro Arg Asp Asp Glu Pro Ala Pro Asn Ser Ser Val Asp Lys Leu Ala
          245          250          255
Ala

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<210> 10

<211> 287

<212> PRT

<213> Artificial Sequence

<220>

<223> Fusion peptide

<400> 10

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Lys Tyr Leu Leu Pro Thr Ala Ala Ala Gly Leu Leu Leu Leu Ala Ala
 1          5          10          15
Gln Pro Ala Met Ala Met Val Ser Ala Lys Asp Phe Ser Gly Ala Glu
          20          25          30
Leu Tyr Thr Leu Glu Glu Val Gln Tyr Gly Lys Phe Glu Ala Arg Met
          35          40          45
Lys Met Ala Ala Ala Ser Gly Thr Val Ser Ser Met Phe Leu Tyr Gln
          50          55          60
Asn Gly Ser Glu Ile Ala Asp Gly Arg Pro Trp Val Glu Val Asp Ile

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65					70					75					80
Glu	Val	Leu	Gly	Lys	Asn	Pro	Gly	Ser	Phe	Gln	Ser	Asn	Ile	Ile	Thr
				85					90					95	
Gly	Lys	Ala	Gly	Ala	Gln	Lys	Thr	Ser	Glu	Lys	His	His	Ala	Val	Ser
			100					105					110		
Pro	Ala	Ala	Asp	Gln	Ala	Phe	His	Thr	Tyr	Gly	Leu	Glu	Trp	Thr	Pro
		115					120					125			
Asn	Tyr	Val	Arg	Trp	Thr	Val	Asp	Gly	Gln	Glu	Val	Arg	Lys	Thr	Glu
	130					135					140				
Gly	Gly	Gln	Val	Ser	Asn	Leu	Thr	Gly	Thr	Gln	Gly	Leu	Arg	Phe	Asn
145					150					155					160
Leu	Trp	Ser	Ser	Glu	Ser	Ala	Ala	Trp	Val	Gly	Gln	Phe	Asp	Glu	Ser
				165					170					175	
Lys	Leu	Pro	Leu	Phe	Gln	Phe	Ile	Asn	Trp	Val	Lys	Val	Tyr	Lys	Tyr
			180					185					190		
Thr	Pro	Gly	Gln	Gly	Glu	Gly	Gly	Ser	Asp	Phe	Thr	Leu	Asp	Trp	Thr
		195					200					205			
Asp	Asn	Phe	Asp	Thr	Phe	Asp	Gly	Ser	Arg	Trp	Gly	Lys	Gly	Asp	Trp
	210					215					220				
Thr	Phe	Asp	Gly	Asn	Arg	Val	Asp	Leu	Thr	Asp	Lys	Asn	Ile	Tyr	Ser
225					230					235					240
Arg	Asp	Gly	Met	Leu	Ile	Leu	Ala	Leu	Thr	Arg	Lys	Gly	Gln	Glu	Ser
				245					250					255	
Phe	Asn	Gly	Gln	Val	Pro	Arg	Asp	Asp	Glu	Pro	Ala	Pro	Asn	Ser	Ser
			260					265					270		
Val	Asp	Lys	Leu	Ala	Ala	Ala	Leu	Glu	His	His	His	His	His	His	
		275					280					285			

<210> 11

<211> 21

<212> PRT

<213> Cloning vector pMAB136

<400> 11

Lys	Tyr	Leu	Leu	Pro	Thr	Ala	Ala	Ala	Gly	Leu	Leu	Leu	Leu	Ala	Ala
1				5					10					15	
Gln	Pro	Ala	Met	Ala											
			20												

<210> 12

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetically generated peptide

<400> 12

Asn	Ser	Ser	Val	Asp	Lys	Leu	Ala	Ala
1				5				

<210> 13

<211> 257

<212> PRT

<213> Artificial Sequence

<220>

<223> Fusion peptide

<400> 13

Met	Val	Ser	Ala	Lys	Asp	Phe	Ser	Gly	Ala	Glu	Leu	Tyr	Thr	Leu	Glu
1				5					10					15	
Glu	Val	Gln	Tyr	Gly	Lys	Phe	Glu	Ala	Arg	Met	Lys	Met	Ala	Ala	Ala
		20						25					30		
Ser	Gly	Thr	Val	Ser	Ser	Met	Phe	Leu	Tyr	Gln	Asn	Gly	Ser	Glu	Ile
		35					40				45				
Ala	Asp	Gly	Arg	Pro	Trp	Val	Glu	Val	Asp	Ile	Glu	Val	Leu	Gly	Lys
	50					55					60				
Asn	Pro	Gly	Ser	Phe	Gln	Ser	Asn	Ile	Ile	Thr	Gly	Lys	Ala	Gly	Ala
65					70					75					80
Gln	Lys	Thr	Ser	Glu	Lys	His	His	Ala	Val	Ser	Pro	Ala	Ala	Asp	Gln
				85				90					95		
Ala	Phe	His	Thr	Tyr	Gly	Leu	Glu	Trp	Thr	Pro	Asn	Tyr	Val	Arg	Trp
			100					105					110		
Thr	Val	Asp	Gly	Gln	Glu	Val	Arg	Lys	Thr	Glu	Gly	Gly	Gln	Val	Ser
		115					120					125			
Asn	Leu	Thr	Gly	Thr	Gln	Gly	Leu	Arg	Phe	Asn	Leu	Trp	Ser	Ser	Glu
	130					135					140				
Ser	Ala	Ala	Trp	Val	Gly	Gln	Phe	Asp	Glu	Ser	Lys	Leu	Pro	Leu	Phe
145					150				155						160
Gln	Phe	Ile	Asn	Trp	Val	Lys	Val	Tyr	Lys	Tyr	Thr	Pro	Gly	Gln	Gly
				165					170					175	
Glu	Gly	Gly	Ser	Asp	Phe	Thr	Leu	Asp	Trp	Thr	Asp	Asn	Phe	Asp	Thr
			180					185					190		
Phe	Asp	Gly	Ser	Arg	Trp	Gly	Lys	Gly	Asp	Phe	Thr	Phe	Asp	Gly	Asn
	195						200					205			
Arg	Val	Asp	Leu	Thr	Asp	Lys	Asn	Ile	Tyr	Ser	Arg	Asp	Gly	Met	Leu
	210					215					220				
Ile	Leu	Ala	Leu	Thr	Arg	Lys	Gly	Gln	Glu	Ser	Phe	Asn	Gly	Gln	Val
225					230				235						240
Pro	Arg	Asp	Asp	Glu	Pro	Ala	Pro	Asn	Ser	Ser	Val	Asp	Lys	Leu	Ala
				245				250						255	

Ala

<210> 14

<211> 266

<212> PRT

<213> Artificial Sequence

<220>

<223> Fusion peptide

<400> 14

Met	Val	Ser	Ala	Lys	Asp	Phe	Ser	Gly	Ala	Glu	Leu	Tyr	Thr	Leu	Glu
1				5					10					15	
Glu	Val	Gln	Tyr	Gly	Lys	Phe	Glu	Ala	Arg	Met	Lys	Met	Ala	Ala	Ala
		20						25					30		
Ser	Gly	Thr	Val	Ser	Ser	Met	Phe	Leu	Tyr	Gln	Asn	Gly	Ser	Glu	Ile
		35					40					45			

Ala	Asp	Gly	Arg	Pro	Trp	Val	Glu	Val	Asp	Ile	Glu	Val	Leu	Gly	Lys
50						55					60				
Asn	Pro	Gly	Ser	Phe	Gln	Ser	Asn	Ile	Ile	Thr	Gly	Lys	Ala	Gly	Ala
65					70					75					80
Gln	Lys	Thr	Ser	Glu	Lys	His	His	Ala	Val	Ser	Pro	Ala	Ala	Asp	Gln
				85						90				95	
Ala	Phe	His	Thr	Tyr	Gly	Leu	Glu	Trp	Thr	Pro	Asn	Tyr	Val	Arg	Trp
			100					105					110		
Thr	Val	Asp	Gly	Gln	Glu	Val	Arg	Lys	Thr	Glu	Gly	Gly	Gln	Val	Ser
		115						120				125			
Asn	Leu	Thr	Gly	Thr	Gln	Gly	Leu	Arg	Phe	Asn	Leu	Trp	Ser	Ser	Glu
	130					135					140				
Ser	Ala	Ala	Trp	Val	Gly	Gln	Phe	Asp	Glu	Ser	Lys	Leu	Pro	Leu	Phe
145					150					155					160
Gln	Phe	Ile	Asn	Trp	Val	Lys	Val	Tyr	Lys	Tyr	Thr	Pro	Gly	Gln	Gly
				165					170					175	
Glu	Gly	Gly	Ser	Asp	Phe	Thr	Leu	Asp	Trp	Thr	Asp	Asn	Phe	Asp	Thr
			180					185					190		
Phe	Asp	Gly	Ser	Arg	Trp	Gly	Lys	Gly	Asp	Trp	Thr	Phe	Asp	Gly	Asn
	195						200					205			
Arg	Val	Asp	Leu	Thr	Asp	Lys	Asn	Ile	Tyr	Ser	Arg	Asp	Gly	Met	Leu
	210					215					220				
Ile	Leu	Ala	Leu	Thr	Arg	Lys	Gly	Gln	Glu	Ser	Phe	Asn	Gly	Gln	Val
225					230					235					240
Pro	Arg	Asp	Asp	Glu	Pro	Ala	Pro	Asn	Ser	Ser	Val	Asp	Lys	Leu	Ala
			245						250					255	
Ala	Ala	Leu	Glu	His	His	His	His	His	His						
		260						265							

<210> 15

<211> 266

<212> PRT

<213> Artificial Sequence

<220>

<223> Fusion peptide

<400> 15

Met	Val	Ser	Ala	Lys	Asp	Phe	Ser	Gly	Ala	Glu	Leu	Tyr	Thr	Leu	Glu
1				5					10					15	
Glu	Val	Gln	Tyr	Gly	Lys	Phe	Glu	Ala	Arg	Met	Lys	Met	Ala	Ala	Ala
			20					25					30		
Ser	Gly	Thr	Val	Ser	Ser	Met	Phe	Leu	Tyr	Gln	Asn	Gly	Ser	Glu	Ile
	35					40					45				
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Gln	Lys	Thr	Ser	Glu	Lys	His	His	Ala	Val	Ser	Pro	Ala	Ala	Asp	Gln
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Ala	Phe	His	Thr	Tyr	Gly	Leu	Glu	Trp	Thr	Pro	Asn	Tyr	Val	Arg	Trp
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Thr	Val	Asp	Gly	Gln	Glu	Val	Arg	Lys	Thr	Glu	Gly	Gly	Gln	Val	Ser
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Ser	Ala	Ala	Trp	Val	Gly	Gln	Phe	Asp	Glu	Ser	Lys	Leu	Pro	Leu	Phe
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Gln	Phe	Ile	Asn	Trp	Val	Lys	Val	Tyr	Lys	Tyr	Thr	Pro	Gly	Gln	Gly
			165						170						175
Glu	Gly	Gly	Ser	Asp	Phe	Thr	Leu	Asp	Trp	Thr	Asp	Asn	Phe	Asp	Thr
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Phe	Asp	Gly	Ser	Arg	Trp	Gly	Lys	Gly	Asp	Phe	Thr	Phe	Asp	Gly	Asn
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Arg	Val	Asp	Leu	Thr	Asp	Lys	Asn	Ile	Tyr	Ser	Arg	Asp	Gly	Met	Leu
	210					215					220				
Ile	Leu	Ala	Leu	Thr	Arg	Lys	Gly	Gln	Glu	Ser	Phe	Asn	Gly	Gln	Val
225					230					235					240
Pro	Arg	Asp	Asp	Glu	Pro	Ala	Pro	Asn	Ser	Ser	Val	Asp	Lys	Leu	Ala
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